ACTIVE IMMUNIZATION OF SHEEP AGAINST EPIDERMAL GROWTH FACTOR (EGF): THE EFFECT ON WOOL GROWTH AND SKIN EGF RECEPTORS

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The observation that mouse EGF (mEGF) inhibited wool follicle activity and therefore had the potential to be used as a wool harvesting agent (Moore et al. 1982) indicates that sheep skin bears receptors for an endogenous EGF. We have investigated the physiological regulation of these receptors by active immunization of sheep against mEGF. Wool growth was measured concurrently. Merino wethers (5; 3 years old) were immunized with mEGF using Freunds complete adjuvant on 9 occasions over a period of 18 months. Control animals received vehicle injections alone. Successive vaccinations yielded antibody titres ranging from $1:10^5$ to $1:10^6$. There was a significant increase in the number of specific, high affinity receptor sites for mEGF detected by radioreceptor assay in membrane particles prepared from skin collected after 18 months of treatment (treated: 848.2±143.8 fmol/mg protein: control 45.0±8.6 fmol/mg protein; $P<.001$). This was probably due to neutralization of endogenous EGF-like bioactivity by mEGF antibodies. Autoradiography of frozen skin sections which had been incubated with ^{125}I-mEGF showed that immunization caused a redistribution of receptors from the epidermis, outer and inner root sheath and sebaceous glands in control animals to the dermis in immune animals. No significant changes in wool growth (measured by repeated clipping of 100 cm^2 mid side patches) were recorded between treatment groups. The upregulation of skin EGF receptors by this immunization procedure provides further evidence for the existence of an ovine EGF.

MOORE, G., PANARETTO, B. and ROBERTSON, D. (1982). Aust. J. Biol. Sci. 35: 163.

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